

WHAT IS CLAIMED IS:

1. A safety detection system for a door apparatus comprising:
a plurality of linearly disposed emitters each adapted to
be activated to emit an energy beam; and
a plurality of linearly disposed receivers each
corresponding to one of said plurality of emitters and
adapted to receive one of said energy beams from said
corresponding one of said plurality of emitters;
wherein each of said plurality of receivers is singularly
activated prior to receiving said energy beam in
accordance with a scan sequence, wherein each of said
plurality of emitters is singularly activated to emit
said energy beam in accordance with said scan
sequence, and wherein each activated one of said
plurality of receivers upon receiving said energy beam
deactivates and a next one of said plurality of
receivers in said scan sequence is activated.
2. The safety detection system of claim 1 wherein said
linearly disposed plurality of emitters is disposed upon a
leading edge of a door.
3. The safety detection system of claim 1 wherein said
linearly disposed plurality of emitters is disposed vertically.
4. The safety detection system of claim 3 wherein said door
comprises an elevator door.
5. The safety detection system of claim 1 wherein said
linearly disposed plurality of receivers is disposed upon a
leading edge of a door.

6. The safety detection system of claim 5 wherein said linearly disposed plurality of receivers is disposed vertically.
7. The safety detection system of claim 4 wherein said door comprises an elevator door.
8. The safety detection system of claim 1 wherein said energy beam comprises IR light.
9. The safety detection system of claim 1 wherein each of said plurality of receivers is adapted to wait for a predefined period of time for receiving said energy beam.
10. The safety detection system of claim 9 wherein each of said plurality of receivers is adapted to identify a beam break when said energy beam is not received within said predefined period.
11. A method of performing safety detection in a door apparatus comprising the steps of:
 - a) linearly disposing a plurality of emitters along a first vertical surface;
 - b) linearly disposing a plurality of receivers each corresponding to one of said plurality of emitters along a second vertical surface;
 - c) activating one of said plurality of receivers in accordance with a scan sequence;
 - d) activating one of said plurality of emitters in accordance with said scan sequence to emit an energy beam;
 - e) receiving said energy beam with said activated one of said plurality of receivers, deactivating said activated one of said plurality of receivers in response to receiving said energy beam, and activating a subsequent one of said plurality of receivers as defined in said scan sequence;

- f) activating a subsequent one of said plurality of emitters in accordance with said scan sequence to emit said energy beam; and
- g) repeating steps e through f until each of said plurality of emitters and each of said plurality of receivers is activated in accordance with said scan sequence.

12. The method of claim 11 wherein linearly disposing said plurality of emitters along a first vertical surface comprises disposing said plurality of emitters along an edge of an elevator door.

13. The method of claim 11 wherein linearly disposing said plurality of receivers along a said vertical surface comprises disposing said plurality of emitters along an edge of an elevator door.

14. The method of claim 11 comprising the additional step of constructing said scan sequence to permit synchronization of said plurality of emitters and said plurality of receivers.

15. A method of performing safety detection in a door apparatus comprising the steps of:

- a) linearly disposing a plurality of emitters along a first vertical surface;
- b) linearly disposing a plurality of receivers each corresponding to one of said plurality of emitters along a second vertical surface;
- c) activating one of said plurality of receivers in accordance with a scan sequence;
- d) activating one of said plurality of emitters in accordance with said scan sequence to emit an energy beam;

- e) receiving said energy beam with said activated one of said plurality of receivers, deactivating said activated one of said plurality of receivers in response to receiving said energy beam, and activating a subsequent one of said plurality of receivers as defined in said scan sequence;
- f) activating a subsequent one of said plurality of emitters in accordance with said scan sequence to emit said energy beam;
- g) repeating steps e through f until each of said plurality of emitters and each of said plurality of receivers is activated in accordance with said scan sequence waiting for a predefined period of time after activating one of said plurality of receivers for said receipt of said energy beam; and
- h) identifying a beam break if said activated one of said plurality of receivers fails to receive said energy beam within said predefined period of time.

16. The method of claim 15 comprising the additional step of opening said elevator door after identifying said beam break.

17. A safety detection system for elevator doors comprising:
a series of emitters located on a first door;
a series of receivers located on a second door;
first means for controlling a firing sequence for the emitters;

second means for activating said receivers for detecting beams emitted by said emitters;

third means for controlling said doors; and

said second means for providing a signal to the door controlling means to reverse the doors in response to at least one of a loss of signal and a detected beam interruption.